

CLAIMS

1. Optical device for emitting a laser light beam, comprising:
  - a laser light beam emission source including a package
  - 5 and means for generating the laser light beam housed within said package, the package being provided with a laser light beam emission window;
  - a diaphragm intended to select a central portion of the laser light beam;
- 10 characterised in that said package comprises said diaphragm.
2. Device according to claim 1, wherein the emission source comprises a semiconductor laser diode.
3. Device according to claim 1 or 2, wherein said diaphragm is directly associated to said package at said laser light beam emission window.
- 15 4. Device according to claim 3, wherein said diaphragm is directly housed into the laser light beam emission window.
5. Device according to claim 1 or 2, wherein said laser light beam emission window is shaped so as to be itself
- 20 said diaphragm.
6. Device according to any one of the previous claims, wherein the size of the laser light beam emission window is smaller than the size of the laser light beam in a
- 25 transversal cross section taken at said laser light beam emission window.
7. Device according to claim 6, wherein the laser light beam emission window defines an aperture having a Fresnel number smaller than 2 along a predetermined reading
- 30 direction.
8. Device according to claim 7, wherein said aperture has a Fresnel number smaller than 1.2 along said reading

direction.

9. Device according to claim 7 or 8, wherein said aperture has a Fresnel number smaller than 2 along an orthogonal direction with respect to said reading direction.

5 10. Device according to any one of the previous claims, further comprising a focusing lens.

11. Device according to claim 10, wherein the focusing lens is directly associated to said package at said laser light beam emission window.

10 12. Device according to claim 11, further comprising an adhesive interposed between the focusing lens and the laser light beam emission window.

13. Device according to claim 11, wherein the focusing lens is housed in the laser light beam emission window and is 15 itself said diaphragm.

14. Device according to claim 13, wherein the focusing lens is a Fresnel or diffractive lens.

15. Device according to any one of the previous claims, wherein said package exhibits a longitudinal axis Z and 20 wherein the emission source is arranged into said package so that the emitted light beam propagates along a substantially perpendicular direction with respect to said longitudinal axis Z.

16. Optical reader, comprising a laser light beam emission 25 device for illuminating an optical code, means for generating at least one scan on said optical code, photo-detecting means intended to collect a luminous signal diffused by the illuminated optical code and generate an electrical signal proportional thereto, and processing 30 means intended to elaborate and process the electrical signal, characterised in that said laser light beam emission device is a device according to any one of the

previous claims.

17. Protective and/or insulating package for a light beam emission source, comprising a cavity intended to house means for generating a light beam and a wall provided with 5 a window intended to allow the emission of said light beam, characterised in that it comprises a diaphragm intended to select a central portion of the light beam.

18. Optical device for emitting/detecting a luminous signal, comprising:

10 - a light beam emission source including a package, and means for generating the light beam housed into a first portion of said package, into said first portion a light beam emission window being formed;

15 - photo-receiving means intended to detect a luminous signal diffused by an optical code illuminated by said emission source;

characterised in that said photo-receiving means is housed into a second portion of said package which is optically separate with respect to said first portion, and provided 20 with a window for collecting the luminous signal diffused by the illuminated optical code.

19. Device according to claim 18, wherein the emission source comprises a semiconductor laser diode.

20. Device according to claim 18 or 19, wherein said 25 emission and collecting windows are formed on respective first and second walls of said package, orthogonally oriented with respect to one another.

21. Device according to any one of claims from 18 to 20, further comprising at least one diaphragm intended to 30 select a central portion of the light beam.

22. Device according to claim 21, wherein said diaphragm is directly associated to said package at said light beam emission window.

23. Device according to claim 22, wherein said diaphragm is directly housed into the light beam emission window.
24. Device according to claim 22, wherein said light beam emission window is shaped so as to be itself said diaphragm.
25. Device according to any one of claims from 18 to 24, wherein the size of the light beam emission window is smaller than the size of the light beam in a transversal cross section taken at said light beam emission window.
- 10 26. Device according to claim 25, wherein the emission window defines an aperture having a Fresnel number smaller than 2 along a predetermined reading direction.
- 15 27. Device according to claim 26, wherein said aperture has a Fresnel number smaller than 1.2 along said reading direction.
28. Device according to claim 26 or 27, wherein said aperture has a Fresnel number smaller than 2 along an orthogonal direction with respect to said reading direction.
- 20 29. Device according to any one of claims from 18 to 28, also comprising a focusing lens.
30. Device according to claim 29, wherein the focusing lens is directly associated to said package at said light beam emission window.
- 25 31. Device according to claim 30, further comprising an adhesive interposed between the focusing lens and the light beam emission window.
- 30 32. Device according to claim 30, wherein the focusing lens is housed into the light beam emission window and is itself said diaphragm.
33. Device according to claim 32, wherein the focusing lens

is a Fresnel or diffractive lens.

34. Device according to any one of claims from 18 to 33, further comprising a wall made of an optically opaque material interposed between said first and second portion 5 of the package.

35. Optical reader, comprising a light beam emission device for illuminating an optical code, means for generating a scan on said optical code, a device for detecting the luminous signal diffused by the illuminated optical code 10 and for generating an electrical signal proportional thereto, means for elaborating and processing said electrical signal, characterised in that said emission and detection devices are integrated in a single device according to any one of claims from 18 to 34.

15 36. Protective and/or insulating package for a light beam emission source, comprising a first cavity portion intended to house means for generating a light beam and provided with a first wall wherein there is formed a window intended to allow the emission of said light beam, characterised in 20 that it comprises a second cavity portion intended to house photo-receiving means for detecting a luminous signal diffused by an optical code illuminated by said means for generating a light beam, and provided with a second wall wherein there is formed a window for collecting the 25 luminous signal diffused by the illuminated optical code, said second cavity portion being optically separate from said first cavity portion.